

Suggestions for SME Policy for Sustainable Development¹

Ky Young Park*

Abstracts This article is a suggestion for SME policy in Korea for the attention of the senior policy-experiencer of the whole nation, the Advisor to the President of Korea. This article is written from the perspective of technology policy experts, not SME experts. In spite of many SME policies, the issue of SMEs in Korea is worsening, not being resolved. Technology-oriented policies are effective for each company, but the role of SMEs is gradually decreasing in the Korean economy. Reflecting on this fact, I would like to suggest measures that include long-term, but social as well as educational. The solution I suggested is coexistence since sustainable growth through SMEs is not just an economic or social issue. It is a matter of survival. I propose four types of coexistence: corporate, local, human, and coexistence with nature. Getting coexistence works requires a change in social norms that mobilize even education.

Keywords SME policy, coexistence, socio-economic-cultural issue, technology-based SME policy

I. Introduction

This article is a restatement of the presentation made at the annual conference of the Asian Society for Innovation and Policy. This article is a suggestion for the small and medium enterprise (hereafter SME) policy of Korea for the attention of the senior policy-experiencer of the entire nation, the Presidential Advisor of Science and Technology.

The basic premise is that the sustainable growth of the Korean economy is the same as SMEs. However, this article takes a view on SME policies from the perspective of technology policy experts, not SME policy experts. Everywhere, the representative tools of SME policies are technological innovation. Technology development is important.

Submitted, November 29, 2019; Accepted, December 17, 2019

* Professor, Department of Biology, Sunchon National University, Former Adviser to the President for Science Technology and Innovation, Korea; plpm@snu.ac.kr

¹ This article is a restatement of the presentation at the 2019 conference of the Asian Society for Innovation and Policy in the University of the Philippines, Diliman.



This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.

Technology start-ups are important. An ecosystem for technology development and ecosystem is essential. Furthermore, an innovation system should be established in the industry because growth through technology is more efficient and lasts longer. This approach has been implemented for decades in Korea. Nevertheless, the problems of SMEs are worsening, not being resolved. Why? Technology-oriented policies are effective for each company, but the role of SMEs is gradually decreasing in the Korean economy as a whole.

The purpose of this paper is a suggestion to solve the problems of SMEs by reflecting on such a situation, not just technological innovation, but also the innovation of the economy and society as a whole.

However, this study has limitations. Although I was a policymaker for the whole country, I was limited to the field of science, technology and innovation, and I am a biologist rather than an SME specialist. However, I will suggest a policy paradigm for SMEs with the thought that only pointing to SMEs cannot solve the problems of SMEs.

This article will first show the current status of SMEs and how SME policies are formulated. Furthermore, Chapter 3 looks at the new challenges for SMEs in terms of relevance to the whole country. Chapter 4 looks at the European Union's SME policies. Here, it will show that not only the economic approach, but also the entire society is being mobilized to solve the problems of SMEs.

In Chapter 5, I look at problem-solving suggestions by SME experts in Korea and show the limitations of such an approach. Subsequently, in Chapter 6, I will present my own opinions and show four types of coexistence as long-term solutions.

The problems with SMEs need a social approach in addition to the economic or legal approaches commonly taken.

II. Evaluation of Korea's SME Policy

1. Position of SMEs

As of the end of the first half of 2019, exports accounted for 18.8% of total economic activity, compared to 90.5% of employment (Table 1). The proportion of loans to SMEs and startups continues to increase in number, and investment in ventures also increases in number and amount.

Table 1 Ratio of SMEs

	Export (%)	Employment	Startups	Loan	Venture Investment	
					₩ B	No
2015	18.2		1,161,74	77.4	2,086	1,045
2016	20.0	90.6	1,190,177	79.2	2,150	1,191
2017	18.0		1,256,267	80.9	2,380	1,266
2018	17.4		1,344,366	81.2	3,425	1,399
2019 1/2	18.8	90.5	642,488	81.6	1,900	826

Source: KOSBI (2019)

Korea's exports amounted to \$ 620.8 billion in 2018, of which less than 1% are from SMEs (Table 2). The top five exports of SME products are Plastic products, Automotive Parts, Cosmetics, Synthetic resin, and Semiconductors. Each category is valued between \$30 million and \$55 million.

Table 2 Export items of Korea and SME share (2018)

No	Export items	% (Billion \$)	SME %
1	Semiconductor	20.9	0.1
2	Machine	8.9	0.1
3	Petrochemical	8.3	0.2
4	Petroleum Products	7.7	
5	Automobile	6.8	
6	Steel products	5.5	0.1
7	Display	4.1	0.1
8	Automotive Parts	3.8	0.2
9	Ship	3.5	
10	Wireless communication equipment	2.8	
11	Textiles	2.3	
12	Computer	1.8	
13	Other	23.6	
Total		100 (604.859)	

2. Problems of SME Policy

Korea’s SME support policy has so many programs that it covers almost all areas. In the 2018 SME Support Programs announced by the Ministry of Small and Medium Venture Business, SME support programs are classified by function, by target, and by industry. Local governments also operate regional SME support programs.

The functional programs include seven types, such as startups, finance, R&D, human resources, sales/marketing, export, and others, as shown in Table 3. Targeted programs are promoting startups, small business owners, small businesses, and medium enterprises.

Table 3 SME support programs by function

Target	Programs	No of small programs
1. Startups	Idea, infra, knowledge service, re-startups	33
2. Finance	General, credit guarantee	10
3. R&D	Funds, ability, smart factory	17
4. Human resources	Building, invitation	10
5. Sales/marketing	Government, priority purchasing, marketing	17
6. Export	Export	13
7. Others	Female, disabled, local, consulting	24
Total		124

Looking at SME support programs alone, Korea’s SME policies are not lacking. However, if we look at the effectiveness of a policy, focused on the policy target, SMEs in Korea still have many problems to be solved.

The problem with Korean SMEs is that their relative roles in the economy continue to shrink, and there is a huge gap compared to large companies. SMEs’ productivity is only 32.4%. Wages also differ significantly from large firms. Table 4 shows the difference in wages between large and small firms in Korea.

The level of wage of SMEs compared to large firms is gradually deteriorating from 56.7% in 2012 to 54.2%. This ratio is worse for smaller firms. In firms with five employees or less, it is only 32.6% of a large firms, and in the case of firms with 500 employees or less, it improves to 70.0%. On the other hand, Japan is gradually improving from 84.2% to 88.1% over the same period (Table 4).

Table 4 Wage comparison between SMEs and big companies

Classification	Korea			Japan		
	2012	2017	Change ('12-'17)	2012	2017	Change ('12-'17)
1~4 person	33.7	32.6	-1.1p	66.5	71.8	5.3p
5~9 person	50.7	48.3	-2.4p			
10~99 person	59.8	57.2	-2.6p	77.7	83.8	6.1p
100~499 person	72.6	70.0	-2.6p	85.8	87.8	2.0p
Over 500 person	100.0	100.0	-	100.0	100.0	-
Total	56.7	54.2	-2.5p	84.2	88.1	3.9p

Source: Noh (2019b)

Korea's wage system measured against GDP per capita shows a wide gap between large firms and SMEs. The smaller the size, the lower the wage (Table 5). On the other hand, Japan's gap in GDP is not so large.

Table 5 SMEs wage compared to per capita GDP

Classification	Korea		Japan		Ratio (Korea/Japan)	
	Average wage (A)	Percent of GDP per capita (C)	Average wage (A)	Percent of GDP per capita (C)	Ratio of Average wage (A/B)	Difference (C-D)
1~4 person	1,745	62.3	2,270	74.7	76.9	-12.4p
5~9 person	2,583	92.2	2,665	87.7	96.9	4.5p
10~99 person	3,061	109.2	2,893	95.3	105.8	13.9p
100~499 person	3,742	133.5	3,034	99.9	123.3	33.6p
Over 500 person	5,347	190.8	3,455	113.7	154.8	77.1p
Total	2,896	103.3	3,044	100.2	95.1	3.1p

Source: Noh (2019b) (PPP Exchange Rate 2019.3.25)

3. R&D of SMEs

The share of R&D in SMEs in the country has decreased continuously from 26.6% in 2007 to 25.8% in 2012 and 21.9% in 2017 (Table 6). Also, the R&D cost per researcher is decreasing from 44.7% in 2007 to 27.6% in 2017.

Table 6 R&D ratio of SMEs

Classification	2007	2012	2017
Total R&D (%)	26.6	25.8	21.9
R&D expenditure/person (Big co. = 100)	44.7	36.7	27.6
R&D expenditure/person (₩ Million)	76.4	83.1	79.1

The share of government support for SMEs is surprisingly weak compared to other countries. Noh (2019a) shows that Korea's support for SME technology development is relatively weak, as seen in Table 7.

Table 7 R & D investment ratio of government to the corporate (Unit: %)

Classification	Korea (2016)	France (2015)	England (2015)	USA (2013)
Subsidy	4.17	19.86	13.77	3.50
Tax incentive	4.18	8.85	8.70	9.16
Total	8.35	28.71	22.47	12.66

Source: OECD, Noh (2019a)

One of the reasons for the decline in the relative weight of SMEs seems to be the weakening of technological development power. Technological power, however, is not the main reason.

III. New Challenge

1. New Technology Trends

1.1 The 4th Industrial Revolution Technology

We are facing the 4th Industrial Revolution. A simple definition of the 4th Industrial Revolution is the combination of superintelligence, super connection, and super autonomous relations between humans and physical things.

Information and communication technology (ICT) started with connections among human beings. But with recent technological changes, ICT makes connections between human beings and physical things, and also among physical things.

Key technologies of the 4th Industrial Revolution are artificial intelligence (AI), ICBM, and DNA. ICBM means Internet of Things (IoT), Cloud, Big Data, and Mobile. Among them, current new Mobile technology is the 5G (generation) communication technology (Table 8).

However, Moon and Seol (2017) argue that the 4th Industrial Revolution takes time to unfold, unlike the introduction of the scientific novel. The whole feature of the revolution is shown in Table 8. Core technologies are mentioned above as well as applications to several products such as wearables, synthetic biological products, and smart systems such as smart cars, smart factories, smart security, smart Medicare, smart defense, smart city, and smart energy. The third factor they put forward is institutional matters. Without institutional changes, they expect the revolution will not come soon.

Table 8 Structure of the expected 4th Revolution

Area	Sector	Technologies/applications
Technologies	Science	
	Core	AI, IoT, cloud, big data, robot and 5G communication
	Base	Data security, sensor, new material and genome technologies
Applications	Products	Wearables, synthetic biological products
	Smart systems	Smart car, smart factory, smart security, smart Medicare, smart defense, smart city, smart energy
Institutions	Legal Institutional	Data properties, test and certification, guidelines for smart applications,

Source: Moon and Seol (2017)

The other fact they highlighted is the scientific activities about these technologies. Research and development are key to this development.

1.2 5G, The Quickest Core Technology

5G refers to the 5th generation of communication technology, following the 4th generation. The difference between 4G and 5G can be summarized as follows: 5G is 20 times faster in speed, shortened delay time, fast mobile communication up to 500km per hour, and 100 times more energy efficient than

4G. Simply speaking, the speed and stability make the barrier of physical distance no longer an obstacle. 5G will be used for industrial digitalization in all areas, as Figure 1 illustrates. This technology is the basis of other technologies for the 4th Industrial Revolution.

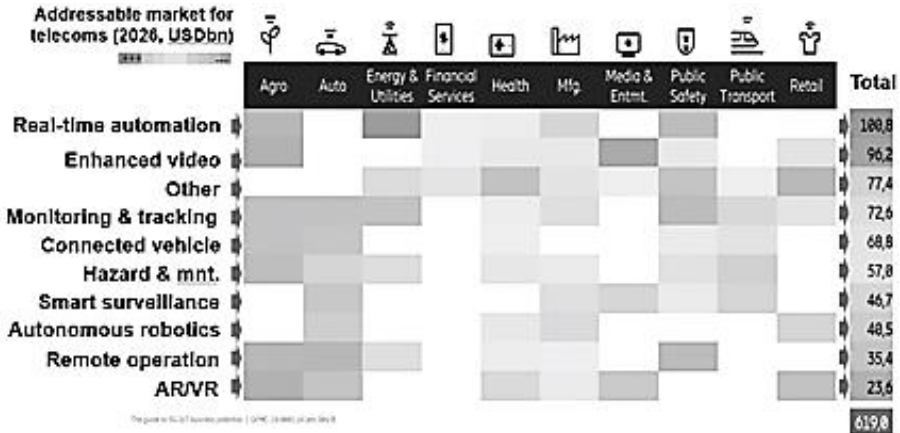


Figure 1 5G use cases in the Industry

Source: Apicella (2018)

2. New Challenge: Japan's Export Control

The semiconductor is the largest export product of Korea, accounting for 20% of Korean exports, and most of the parts and materials used for its manufacturing are imported from Japan. Korea is the world's leading semiconductor manufacturer. However, SMEs associated with these large firms have not grown more rapidly than the large firms.

The Japanese government announced the export controls on key items for the production of the semiconductor on July 1, 2019, export control started on August 28. Some items were blocked such as Photo Register, HF Gas, and Polyimide, which are essential for the production of semiconductors, and Japan is nearly the sole supplier of the items.

Korea's import of semiconductor and chip-making equipment is sourced from Japan (32.0%), the Netherlands (22.2%), the United States (21.0%), and others (Nikkei Asian Review, 2019.7.31.). Therefore, Japan views the export control and interruption of these items as a great arm to Japan diplomacy.

A survey (Park et al., 2019), however, shows that the substitution ratio by Korean SMEs differs from item by item ranging from 42.9% to 100%. The lower the ratio, the more difficult to substitute. However, Korean companies think the current situation is a crisis in the short term, but the best chance to

substitute Japanese items with Korean SMEs products in the long term. Therefore, current and future Korean technology policies are concentrated in those items affected by the export control of Japan.

IV. EU SME Policy - A Case of Sociocultural Approach

The European Union (EU) is made up of small, medium and large countries. So, their policy should be universal and integration-oriented. Two current policies are relevant to our discussion, even if the territorial boundary is different.

1. Smart Specialization

Recently, the EU has proposed smart specialization as a regional growth strategy. “Smart specialisation is an innovative approach that aims to boost growth and jobs in Europe by enabling each region to identify and develop its competitive advantages. This strategy is focused on decentralized and bottom-up policy. Through its partnership and bottom-up approach, smart specialisation brings together local authorities, academia, business spheres, and the civil society, working for the implementation of long-term growth strategies supported by EU Funds.” They call this initiative S3 for smart, specialisation and strategy (Smart Specialisation Platform - europa.eu, <https://s3platform.jrc.ec.europa.eu>).

The challenges of this initiative are as follows; 1) the involvement of stakeholders to drive the innovation process, 2) the development of efficient innovation policy to support the structural transformation of the economy, 3) the pursuit of the internationalization of the regional/national economy as well as the positioning in the European value chains.

It is suggested that smart specialization started from a reflection on top-down regional support policy. This policy is driven by the need for local governance and maximize local potential, and by breaking away from blindness seeking only high-tech industries. Smart specialization is intended to promote and improve traditional industrial structures. This policy requires a leading regional strategy that develops and combines new complex technologies with local specialized functions and advantages for fostering and diversifying competitive edges.

The regions for smart specialization are selected as the framework shown in Figure 2. Technological relatedness and knowledge complexity are selection criteria. So, high technological relatedness and high knowledge complexity are chosen.

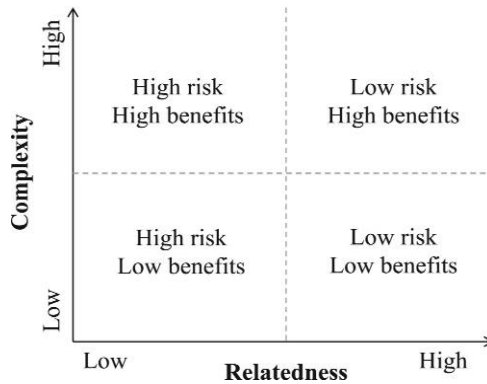


Figure 2 New paradigms for SME support policy

Source: Balland et al. (2019)

2. Meta Cluster

The EU includes many countries that have a small population and, then, a small market. Therefore, they have to choose some suitable policy concepts: comparative regional competitiveness clusters, country, and a little big region-based. One example of this selection is the smart specialization.

The EU is strong in cluster policy. Cluster organizations can be categorized as incubator, accelerator, co-working space, investor and technology. All the clusters which have more than 100 cluster organizations are located in the EU (European Cluster Collaboration Platform). And most of the big clusters are also in the EU. The EU goes further for the meta-cluster.

In EU terms, “Clusters can be defined as a group of firms, related economic actors, and institutions that are located near each other and have reached a sufficient scale to develop specialised expertise, services, resources, suppliers and skills (Directorate-General for Enterprise and Industry, 2008).” Cluster has three dimensions: geographical concentration, providing specialized and customised services, and institutional fix. The institutional fix means that all the different actors work together and collaborate for the clusters. The EU ranks clusters by 3 stars, 2 stars, and 1 star.

The concept of meta-cluster has been recently highlighted in the EU. Meta-cluster aims to work towards better complementarity at local, regional, national, and European levels, in line with the challenges identified and assumed by the European Commission. Meta cluster refers to the cluster of clusters. The strategy of meta-cluster supports the internationalization of startup companies and SMEs in clusters. It needs to extend the cluster concept and make local value chain

sharing and linkage. It avoids unbalanced growth in the region by regional differentiation.

The concept of transition of the cluster to meta-cluster is as follows: Industry cluster is based on mass production. But there is a big trend that sees the consumer power increasing. That means the increasing need for customized products, not mass products. Therefore, meta-cluster is based on specialized production in response to specialized demand. Besides, it targets a decentralized cooperative structure with production, service, culture, institution, and culture (Figure 3).

An example of meta-cluster is the ICT Meta Cluster. The partners of the ICT Meta Cluster are Fiber Optic Valley, Acreo Swedish ICT, Latvian IT Cluster, and Estonian ICT Cluster. The objective is to create and validate a complete value chain for the 400 ICT-oriented companies in the meta-cluster. The details are to (1) generate first sales of their products and services at new markets outside the EU and EFTA (starting with Brazil, Canada and Azerbaijan), (2) expand those within the respective countries and regions, (3) prepare for further development over the globe (Territories go global, Good Practice, EU).

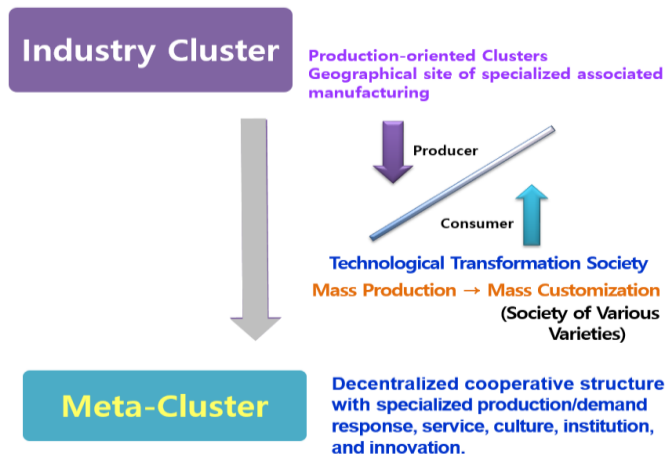


Figure 3 Concept of transition from industry cluster to meta-cluster

V. Suggestions by SME Experts - A Socioeconomic Approach

Korea Small Business Institute published a report (Choi et al., 2018) for building an SME-oriented national economy. This study was based from the contribution of many experts from outside as well as in-house researchers of the institute. This report aims to create a sustainable corporate ecosystem by 1)

enhancing the competitiveness of SMEs, 2) reducing the concentration of economic power of large corporations, and 3) establishing a sustainable growth path. The current situation is that large corporations are getting bigger. Therefore, the economic management axis should be shifted from large companies to SMEs. Koreans can easily understand this suggestion for the Korean economy. But it will be hard for non-Koreans or younger generations to understand. Therefore, let's take a brief look at the growth process of the Korean economy.

1. Growth of Korea's Economy - Results of Technology Policy

Korea's science and technology policy has played an important role in industrial growth (Figure 4). There was almost no industrial base, destroyed during the Korean War. Even the number of scientists was counted on the fingers of one hand.

Since the 1960s, however, Korea has spurred the economic policy based on technologies. The government began technology import policies. Further, the government led the establishment of science and technology research institutes and invited Korean scientists and engineers working in advanced countries with very favorable conditions. They became a channel to introduce science and technology prevalent in advanced countries, and the S&T institutions became the melting pot for the imported technologies. Of course, the S&T policy during this period was the import and introduction of foreign technologies.

Since the 1970s, the technology policy changed, starting to imitate the policy of advanced countries along with the development of the light industry. Exports of light industry products such as textiles, plywood, and especially wigs expanded, and the economic capabilities of private companies increased.

Since the 1980s, the government has focused more on R&D policies, and investments in science and technology have increased significantly by both the government and the private sector. Most of the science and technology investment at this time was concentrated on the development of industrial technology. Since then, Korea's domestic technology has improved rapidly enough to catch up with foreign advanced technologies. As a result, the government, which has more confidence in economic growth, has shifted its science and technology policy from the light industry to fostering the heavy and chemical industry. Since then, industrial complexes have been established nationwide, and large investments have been made in the petrochemical, machinery, and steel industries. Due to the poor economic base of Korea, large companies were selected as arms to lead the economy since they are more efficient in terms of growth.

This policy led to the creation of global conglomerates. During this period, the central government's intensive industrial policy concentrated many benefits on

large companies. However, a big emphasis on growth led to excessive investment, and in turn, overcapacity of companies and the dependence on debt. After all, Korea suffered massive bankruptcy and layoffs during the 1997 financial crisis. Companies, as well as government, have shifted their focus from volume-based investments to innovative growth. Furthermore, the government actively supported venture startups and the ICT sector where new startups are active. Korea's science and technology policy, especially in the 2000s, took note of the venture boom, focusing on innovation as the key to its growth.

Although Korea has shown to be a good example of government-led growth through technology policy, the growth of SMEs has not been so successful. The growth of big conglomerates threatens the sustainability of SMEs and, more broadly, the Korean economy.

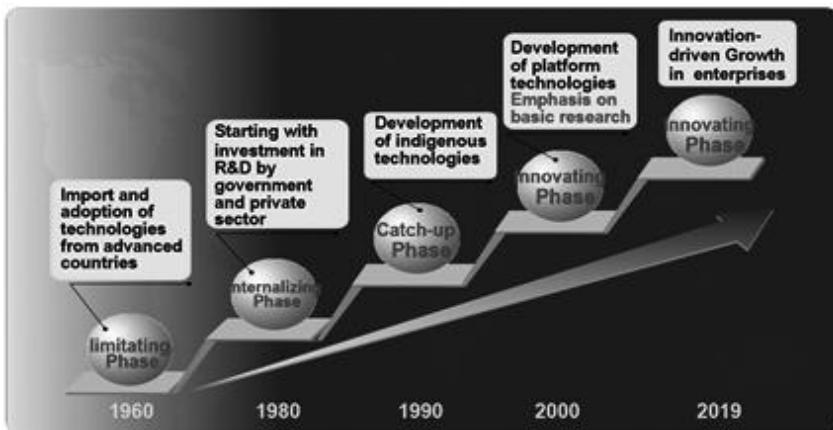


Figure 4 Evolution of S&T policy in Korea

2. SME-oriented Economy

The Korea Small Business Institute has proposed three policy objectives: 1) strengthening mid-term competitiveness, 2) easing the concentration of large enterprises, and 3) establishing a sustainable growth path. Through this, it is possible to create a sustainable corporate ecosystem and to have dynamics that promote high-growth startups.

First of all, three challenges are present in strengthening SME competitiveness. The first is to enhance innovation, to build a collaborative platform and create a win-win cooperation fund for an open innovation system. The second suggests establishing a regional SME vocational training network for the development of skilled workers. Third, there is proposition for overseas funds for the

globalization of SMEs. New fund proposals are similar, but collaborative platforms and regional vocational training networks are considered new ideas.

In creating a sustainable corporate ecosystem, the Korea Small Business Institute first proposes to build a scale-up platform. Second, deterring unfair trade, and third, deregulation and fostering inter-industry convergence models to foster new industries. The scale-up platforms or inter-industry convergence models are the new programs. Meanwhile, the suggestion of unfair trade and deregulation is the institutional solution.

To solve the above problems, the government should reform the policy system. First, it proposes setting up the highest organization to review SME policies. The second is the evolution of policies to provide programs to link the function policy (funds, personnel, technology, etc.) with targets policy (startup, global, small business, etc.). The third is the legal array – the reorganization of various SME-related laws, and the expansion of the space where the Fair-Trade Commission can intervene in unfair trade, and define fair trade types in various laws.

VI. New Suggestions for SME Policy

1. Coexistence for Sustainable Development

1.1 Coexistence

The fact that the same problems related to SMEs have been raised during the last several decades' leads to a question: Is it enough to solve the problem with policy and policy institutions? These are the challenges that must be addressed in order to solve the SME problems in Korea. But before that, it is necessary to simultaneously raise the general public's awareness of why they are needed. It is to solve both mental and institutional aspects at the same time.

In this regard, I would like to propose four coexistences such as economic, regional, human, and natural for sustainable growth, reflecting the Korean situation. It seems that coexistence is foreign to SMEs and SME policies. The value from coexistence, however, can be an important basis for the growth of SMEs.

Nobel Prize Economist William Nordhaus and Paul Romer worked on Carbon Taxes for long-term sustainable growth. They wanted to mix environmental issues and technological progress or economic growth. In addition to these, I want to add a mix of social and human issues, so the four coexistence.

Table 9 Types of coexistence

Type	Target
Economic coexistence	Fair economy
Regional coexistence	Balanced development
Human Coexistence	Equal Opportunities
Natural coexistence	Sustainability

a) Economic coexistence

Economic coexistence is based on the current situation of the Korean economy showing the disparity between SMEs and big companies. It is a timely issue toward building a fair economy.

As we saw in the second part of this article, the share of SMEs in the Korean economy is gradually decreasing, and the productivity gap is gradually widening. As a result, the wage level of SMEs is deteriorating. In a cluster, SMEs should be a complementary component of the cluster, but the power of large firms is too strong to call cooperation.

b) Regional coexistence

Regional coexistence means the solution for the relationship between the metropolitan area and the regions, especially the Seoul Metropolitan area and the other regions. It will assist a balanced development. Seoul metropolitan area has 50% of the population (2019), 51.3% in Gross Regional Products (2017), about 68% in money deposit, and about 53% of all startups (Statistical Office). These are high-density numbers in a small area, even though there have been a few dispersion policies, such as the move of the new Korean capital to Sejong. There has been big resistance in moving the government function out of the Seoul metropolitan area. Therefore, regional coexistence becomes another issue to overcome.

c) Human Coexistence

Human coexistence means the resolution of economic inequalities between many parties to foster equal opportunities. Korea has become the fastest aging country. The ratio of people 65 year-old and above was 14.4% of the entire population in 2018; it was 7.3% in 2000. Because of the speed of aging, Older Koreans have not enough savings, and the supporting social system for the elderly is also not enough. Naturalized Koreans have increased quickly, and the economic status is generally below average.

d) Natural coexistence

Natural coexistence is a response to climate change and environmental pollution, as is discussed in many areas.

2. Tools for Coexistence

The problem for SMEs is economic, but in other respects, it is a matter of survival. The problems of small companies involving more than 90% of the total companies cannot be considered only in economic terms because they raise various social and human issues. In other words, the problem of SMEs is the basis for coexistence. The problem is that there are various issues that need time to be solved. Some can be solved in a short time, but others need several years.

The most representative short-term effort was the government's direct involvement. The medium-term approach was the solution through social system change. Examples of these are the change in decision-making bodies related to SME policy, the revision of related laws, and the deregulation. Nevertheless, there is no big effect on these policies. Therefore, we need to add social and philosophical alternatives. This alternative can be secured through school and social education. Education for long-term solutions, after all, requires coexistence for sustainable growth.

However, I do not reject short-term and medium-term policies. A medium-term approach typically consists of clusters or ecosystems policy. Clusters refer to the linkages and cooperation between industries in specific regions and the social institutions and cultures that support them. Traditional innovation system theory also emphasizes the linkage and cooperation of technologies, industries, and institutions for innovation.

The question is, who will lead, and in what spirit? In Korea, most of the innovation systems are led by large companies. This may be good in the short term, but they have long-time problems such as economic imbalances. Therefore, there is a need for clusters for startup companies and SMEs, and the creation of ecosystems suitable for them.

The EU attempts to create clusters for independent countries and mega-cluster policies that can transcend countries. This type of policy may be an attempt to reflect the characteristics of the EU. The reason why cluster policy is not so strong outside of Europe is because of different economic structures. Korea is smaller than Europe and can be accessed from anywhere in the country. Also, except for small town-type and rural-type SMEs to meet regional demands, most of them are located in large cities or neighboring regions.

To resolve the problems, there is, first, the need for a collaboration platform for SMEs that reflects regional characteristics and strengths. It needs to be a platform for innovation and startup as well as technology development, production, and marketing. Second, there is the need to designate clusters around

the possible regions so that the entire region functions for the clusters in all aspects of the social and cultural industries.

The policy that I would like to propose for the short term is to respond to new technological changes. Korea is not the leading country in the technology for the 4th Industrial Revolution such as AI, IoT, and Cloud. However, these cannot be ignored as they form new trends. Therefore, a short-term policy requires policies that prioritize the diffusion of these technologies. The important point is that not only the diffusion policy, but also the development policy should be implemented together. Like the early Korean technology policy, the technology development policy for the 4th Industrial Revolution should be actively introduced.

VII. Conclusion

This article is a view of a scientist who has been involved in the nation-wide S&T policy on SME policies. The SME policies have been mainly focused on industrial or technical approaches, but the situation is worsening in spite of many policy instruments. The effects of the short-term programs so far seem to be effective at the micro-level. Also, medium-term countermeasures to change laws and institutions have evolved to solve the problems and roles of SMEs. But these approaches are not enough.

To this end, this paper first showed that EU policies mobilize around a sociocultural approach. Then, suggestions by the SME experts are introduced. These explanations aim to introduce the long-term, but social as well as educational solutions. Sustainable growth is not just an economic or social problem, but a matter of coexistence. They are the corporate coexistence, local coexistence, human coexistence, and coexistence with nature. It is a matter of survival itself.

References

- Apicella, S. (2018) 5G business potential from industry digitalization, ITU Seminar, Budapest, 2-4 July.
- Balland, P.A., Boschma, R., Crespo, J. and Rigby, D.L. (2019) Smart specialization policy in the European Union: relatedness, knowledge complexity and regional diversification, *Regional Studies*, 53(9), 1252-1268, Available on <https://doi.org/10.1080/00343404.2018.1437900>
- Choi, S.K., Lee, J.H., Hong, S.C. and Hong, U.S. (2018) Suggestions for SME-oriented national economy, Korea Small Business Institute, Basic Research, 18-22.
- Directorate-General for Enterprise and Industry (2008) The Concept of Clusters and Cluster Policies and Their Role for Competitiveness and Innovation: Main Statistical Results and Lessons Learned, EU Commission.
- EU, Smart Specialisation Platform - europa.eu, <https://s3platform.jrc.ec.europa.eu>
- Korea Small Business Institute (2019) KOSBI SME Trend.
- Ko, C.R., Bae, S.J. and Seol, S.S. (2017) Suitability analysis of SMEs support means by customized information analysis, *Journal of Korea Technology Innovation Society*, 20-1, 81-102.
- Moon, Y.H., Seol, S.S. (2017) Evaluation of the theory on the 4th industrial revolution, *Asian Journal of Innovation and Policy*, 6(3), 245-261.
- Noh, M.S. (2019a) SME R&D investment status and prospect, *SME Focus* 19-02, 1.14.
- Noh, M.S. (2019b) Comparative analysis of wage gap between big companies and SME in Korea and Japan, *SME Focus* 19-10, 4.22.
- Park, J.S., Kang, J.W., Choi, J.M. and Hong, J.S. (2019) Analysis of supply chain aspects of SMEs in Japan by export regulations, Korea Small Business Institute, *KOSBI SME Focus*, 19-21, 9.9.